



## Q3 2021 Quarterly Activities Report

28 October 2021

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**SYRAH** RESOURCES

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# Syrah's Value Proposition



## Electric Vehicles require graphite

- Electric Vehicle ("EV") adoption is gaining momentum
- Anodes in lithium-ion batteries used in EVs are made of graphite



## Graphite is a strategic critical mineral

- Global anode supply chain is currently 100% reliant on China
- Graphite is designated as a strategic critical mineral in USA, EU, Japan & Australia



## Balama Graphite Operation: A Tier 1 asset

- Long life (>50 years<sup>1</sup>) and high grade (16% TGC<sup>2</sup>)
- Largest integrated natural graphite mine and processing operation globally
- Significant vanadium resource at Balama is a valuable option<sup>3</sup>



## Vertical Integration in USA

- Balama to be vertically integrated with AAM<sup>4</sup> facility at Vidalia, USA
- Large scale ex-Asia AAM supply option that is ESG verifiable

Syrah's vision is to be the world's leading supplier of superior quality graphite and anode material products, working closely with customers and the supply chain to add value in battery and industrial markets

1. Life of mine based on current 108Mt Graphite Ore Reserves being depleted at 2Mt throughput per annum. Refer to 2020 Annual Report released to ASX 29 March 2021 for Reserve as at 31 December 2020. All material assumptions underpinning the Reserves and Resource statement in this announcement continue to apply, other than as updated in subsequent ASX releases.

2. TGC = Total Graphitic Carbon.

3. Scoping study on potential to refine vanadium as per ASX release 30 July 2014.

4. AAM = Active Anode Material.

# Syrah's positive ESG profile



## Leading health and safety standards

- ✓ ISO:45001 and ISO:14001 certification at Balama
- ✓ ISO:9001 certification at Vidalia
- ✓ Vidalia expansion project being developed in line with best practice health, safety and environmental standards
- ✓ Critical Risk Management Framework embedded across the Group



## Best practice sustainability frameworks

- ✓ Sustainability frameworks guided by:
  - Global Reporting Initiative (GRI)
  - United Nations Sustainable Development Goals
  - International Council on Mining and Metals
- ✓ Robust Community Development and Stakeholder Engagement Strategy



## Low carbon footprint

- ✓ Lower carbon emissions footprint (life cycle) of natural versus synthetic graphite<sup>1</sup>
- ✓ Independent Life Cycle Analysis (LCA) nearing completion
- ✓ Implementing initiatives to lower carbon footprint further



## Auditable back to source

- ✓ Fully integrated by Syrah from mine to customer
- ✓ Vidalia products will have a single chain of custody back to the source

1. Benchmark Minerals Intelligence

# Q3 2021: Highlights

<b>Health and Safety</b>	<ul style="list-style-type: none"> <li>Balama and Vidalia quarter end Total Recordable Injury Frequency Rate (“TRIFR”) was 0.0</li> </ul>
<b>Market</b>	<ul style="list-style-type: none"> <li>Continued strong EV sales, with 111%<sup>1</sup> growth in Q3 2021, versus Q3 2020, to over 1.6 million units</li> <li>Forecast global EV sales of 5.6 million units in 2021<sup>2</sup> versus 2.9 million units in 2020<sup>3</sup> (96% growth YoY)</li> <li>Pace of battery capacity commitments and vertical integration of the EV supply chain is accelerating in the USA</li> </ul>
<b>Balama Graphite Operation</b>	<ul style="list-style-type: none"> <li>Balama delivered excellent monthly operational performance for September 2021 with 15kt natural graphite produced at 85% recovery and C1 cash costs (FOB Nacala) of US\$430/t</li> <li>September 2021 quarter production and sales constrained by global container shipping market disruption <ul style="list-style-type: none"> <li>25kt produced at 82% recovery</li> <li>18kt sold and shipped, with 12kt delayed from September 2021 to December 2021 quarter due to a schedule change by a shipping service provider<sup>4</sup></li> <li>C1 cash costs (FOB Nacala) of US\$684/t at ~8kt per month average production rate</li> </ul> </li> <li>Increase in weighted average sales price to US\$490/t (CIF), and further price support evident post quarter end</li> <li>Strong growth in sales order book with more than 50kt of natural graphite sales orders in the December 2021 quarter</li> <li>Global container shipping market disruption expected to moderate through December 2021 and March 2022 quarters</li> </ul>
<b>Vidalia AAM Facility</b>	<ul style="list-style-type: none"> <li>Commercial engagement advancing strongly with 7 target customers and qualification with more than 10 target customers</li> <li>Continued customer testing and iterative feedback on integrated natural graphite Active Anode Material (“AAM”) from Vidalia</li> <li>Interest from target customers driving consideration of accelerated expansion of Vidalia beyond 10ktpa production capacity</li> <li>Advancing to a final investment decision for Vidalia’s 10ktpa AAM expansion in the December 2021 quarter, subject to customer and financing commitments</li> </ul>
<b>Corporate</b>	<ul style="list-style-type: none"> <li>Quarter end cash balance of US\$74 million</li> </ul>

1. Source: MarkLines.

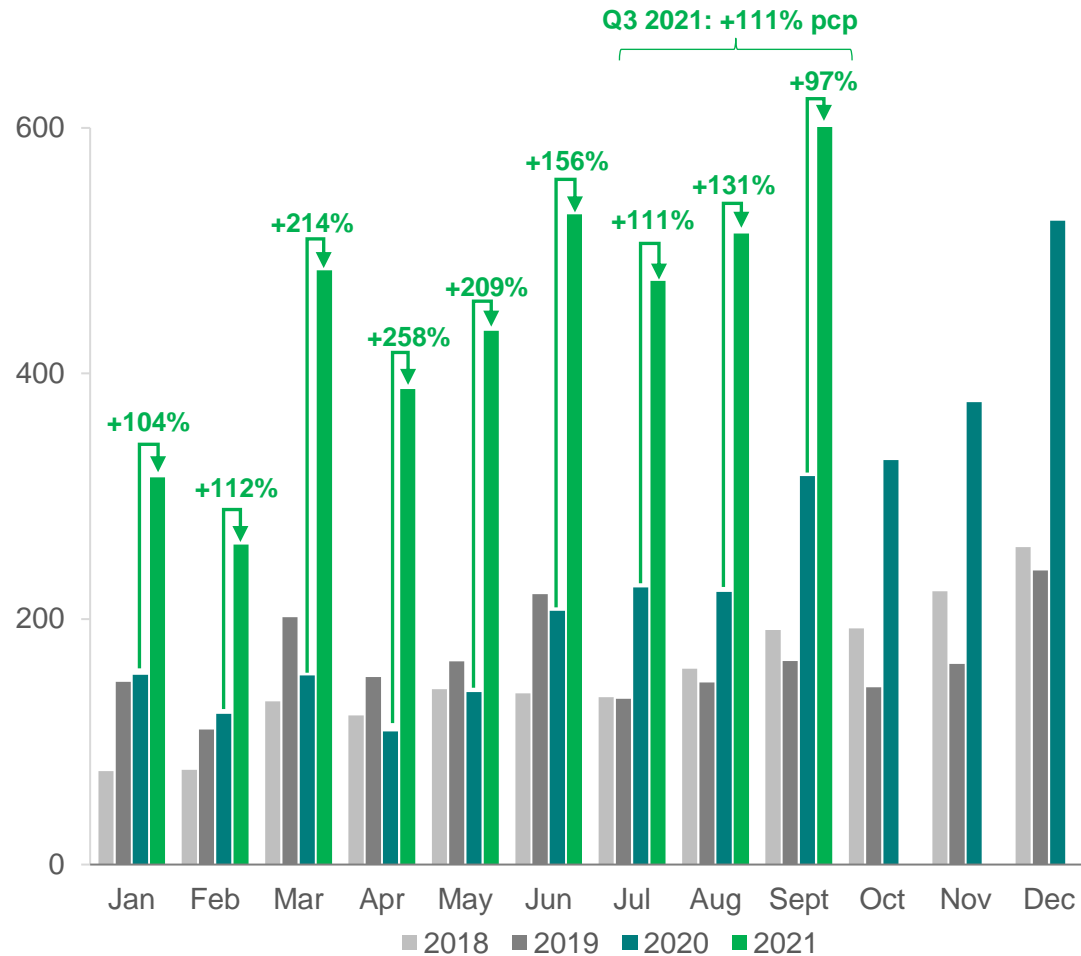
2. Source: Rho Motion.

3. Source: MarkLines.

4. Refer ASX release 17 September 2021.

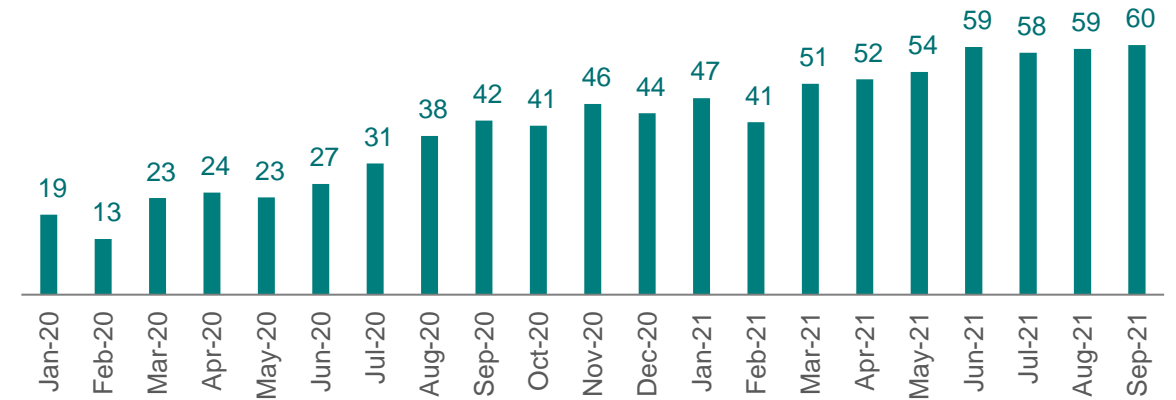
# EV sales and anode material volumes continue to strengthen

Global EV Sales ('000 Units)



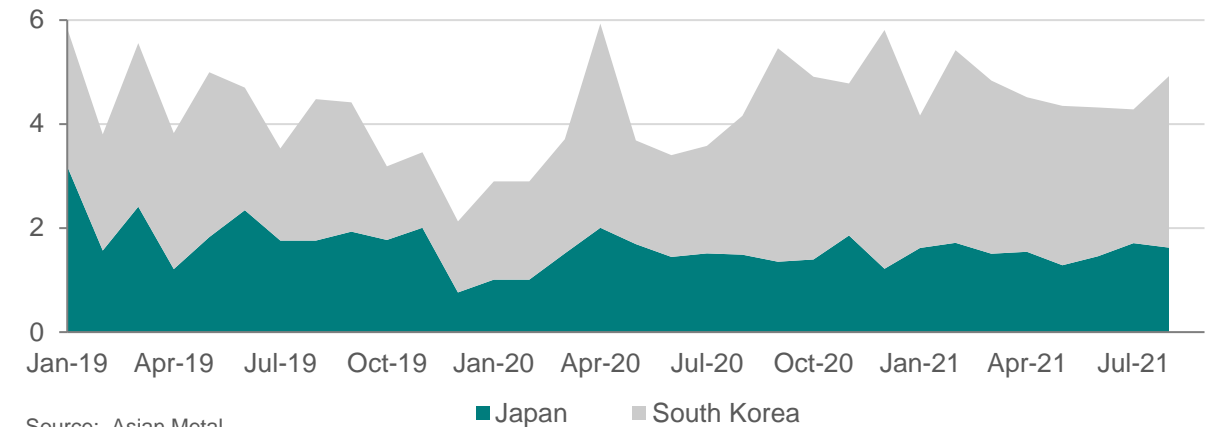
Source: MarkLines.

Chinese Anode Production (kt)



Source: ICCSino.

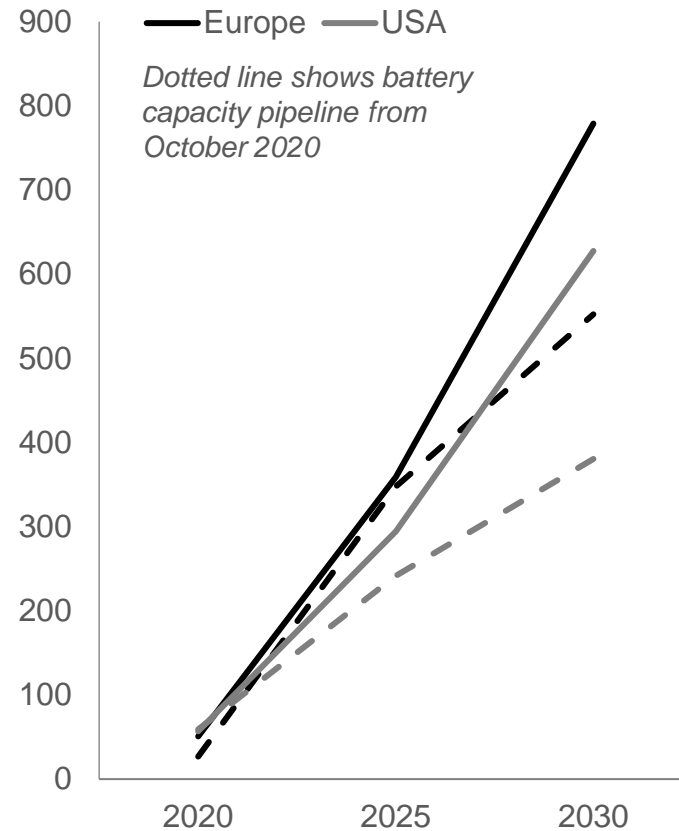
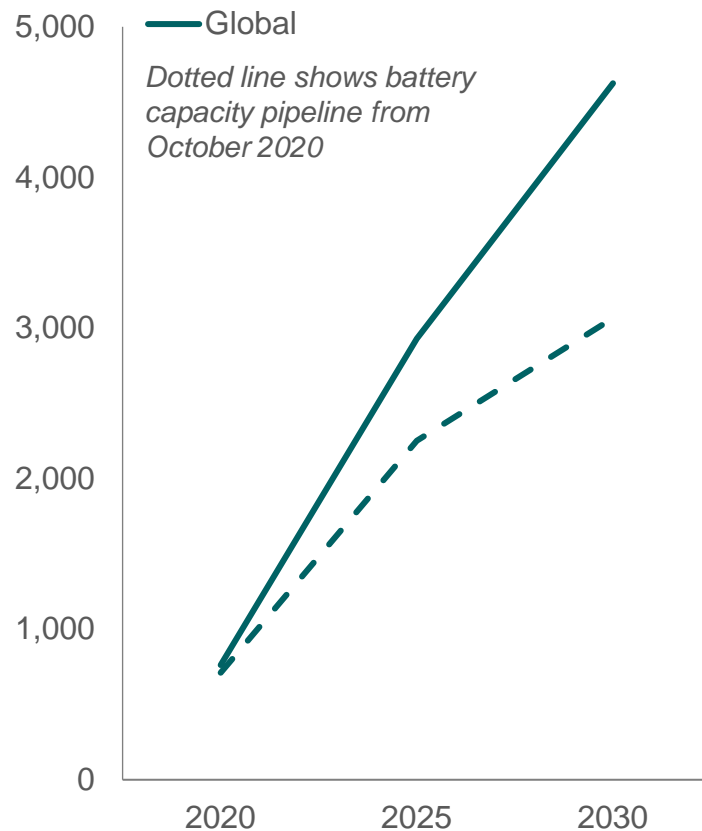
Chinese Purified Spherical Graphite Exports (kt)



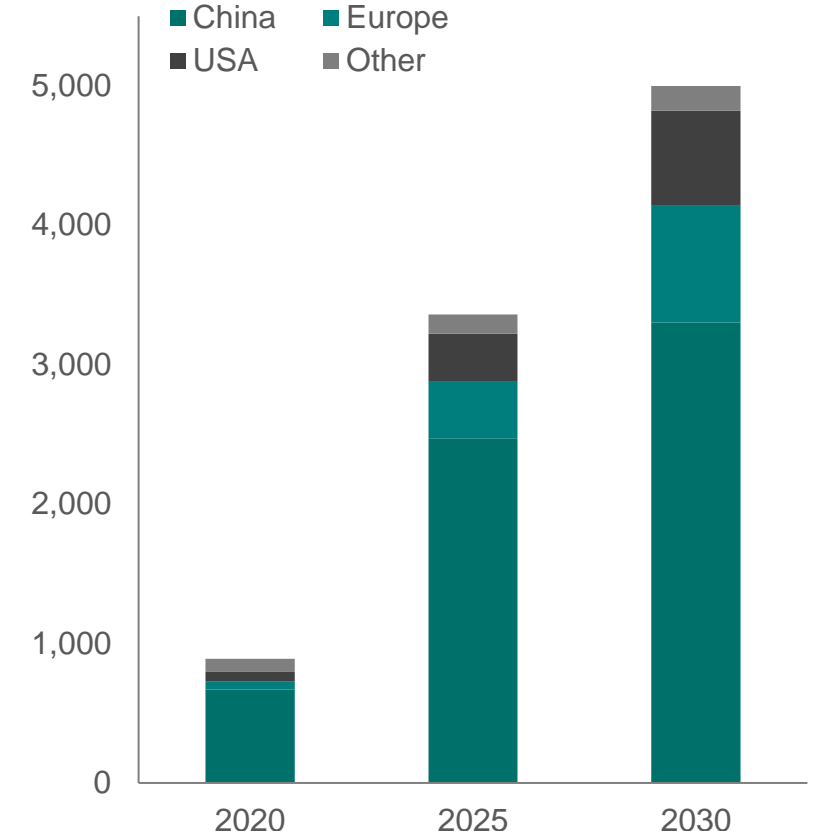
Source: Asian Metal.

# Battery capacity pipeline is increasing rapidly across regions – substantial localised anode material supply is required

**Battery Capacity Pipeline Change Over Last 12 Months (GWh)<sup>1</sup>**



**Graphite Battery Anode Material Requirement (kt)**



**10kt AAM and 40kt AAM capacity at Vidalia equates to 3% and 12%, respectively, of graphite AAM required for USA-based battery capacity by 2025<sup>1</sup>**

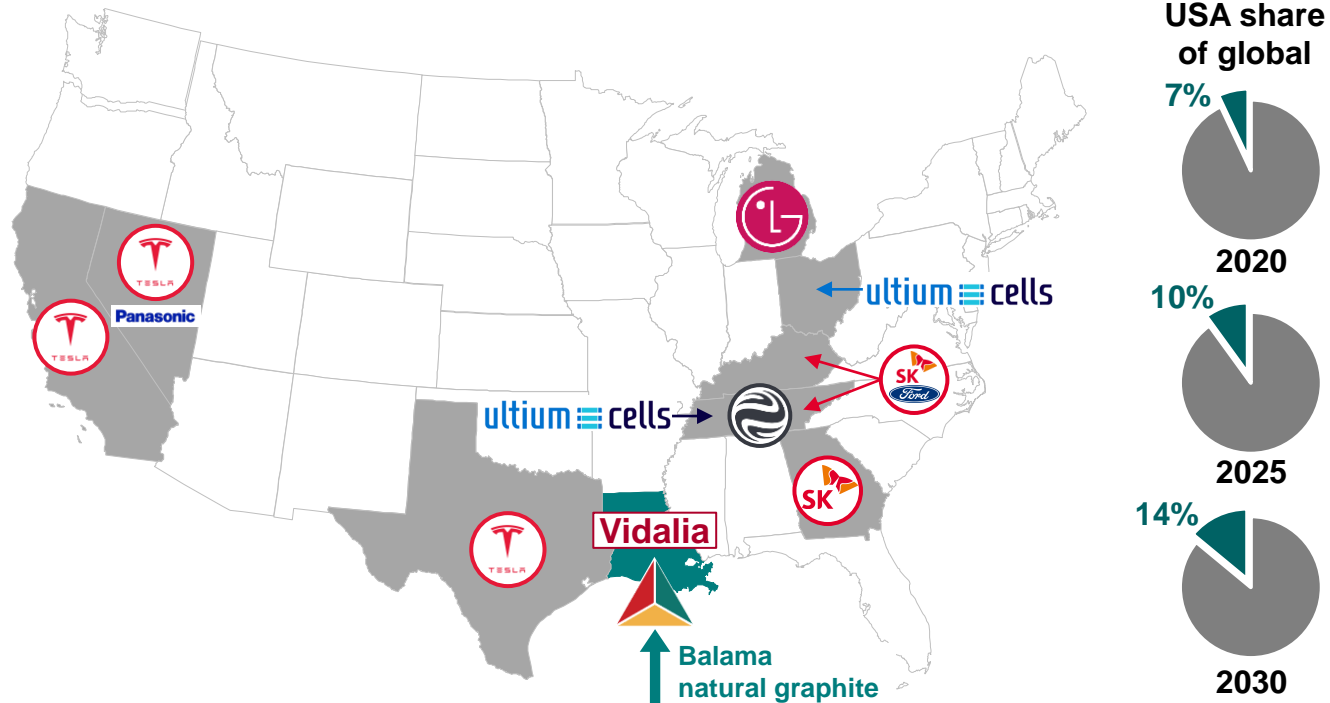
Source: Benchmark Minerals Battery Megafactory Assessment, October 2021 and Flake Graphite Forecast, Q2 2021

1. Based on 2025 forecast USA battery manufacturing capacity of 295GWh, 95% graphite anode market share and 1.2kg/kWh intensity of graphite in anode.



# USA battery market is maturing rapidly to support a large-scale EV manufacturing base in the region

## Location of Planned Battery Capacity in USA



### Announced Major Developments:



### Potential Developments:



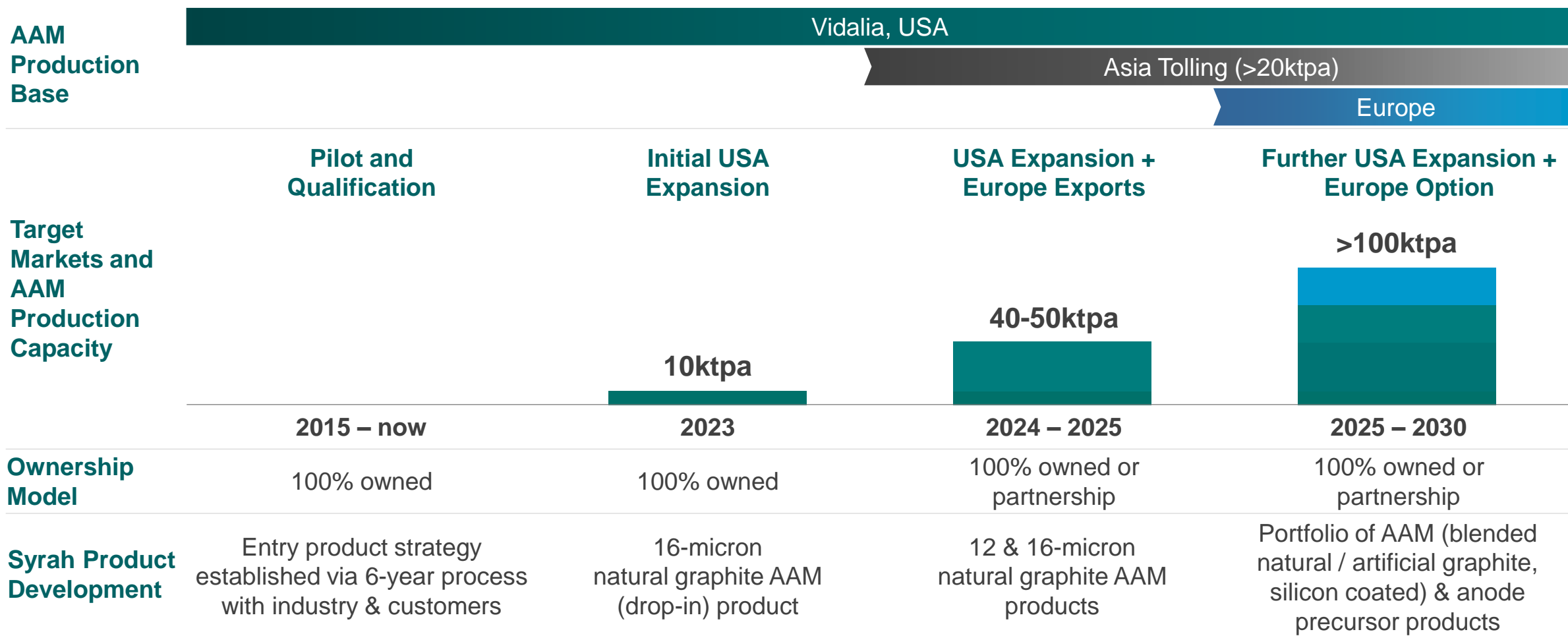
## Planned Battery Capacity in USA (recent commitments highlighted)

Company	Size (GWh)	Location	Status / Start
Stellantis / Samsung SDI	40	TBC	Planning / 2025
Stellantis / LGES	40	TBC	Planning / 2024
Toyota	TBC	TBC	Planning / 2025
FREYR / Koch	50	TBC	Planned / 2030
Ford / SKI (BlueOvalSK)	129	KY	Planning / 2025
Ford / SKI (BlueOvalSK)		TN	Planning / 2025
LG (Green Field Project)	75	MI / TBC	Planning / From 2025
GM / LGES (Ultium Cells 1)	35	OH	Under construction / 2022
GM / LGES (Ultium Cells 2)	35	TN	Planning / 2023
SKI	~10 + ~12	GA	Under construction / 2022
Tesla	95	TX	Under construction / 2022
Panasonic (PENA)	49	NV	Construction / 2022 (35 GWh operating)
Tesla	10	CA	Pilot / Operating
LG	5	MI	Operating
AESC Envision	10	TN	Planned / 2025 (3 GWh operating)
iM3NY	5	NY	Planned / 2025 (1 GWh operating)
Farasis	8-16	TBC	Planning / 2023-4

Source: Benchmark Minerals Battery Megafactory Assessment, October 2021.



# Syrah aims to be a leading supplier of value-added anode products for the rapidly growing global battery supply chain



**Syrah's downstream expansion strategy is underpinned by integration with a scalable mining/processing operation and world-class graphite resource at Balama**

# Q3 2021: Balama Production and Operations

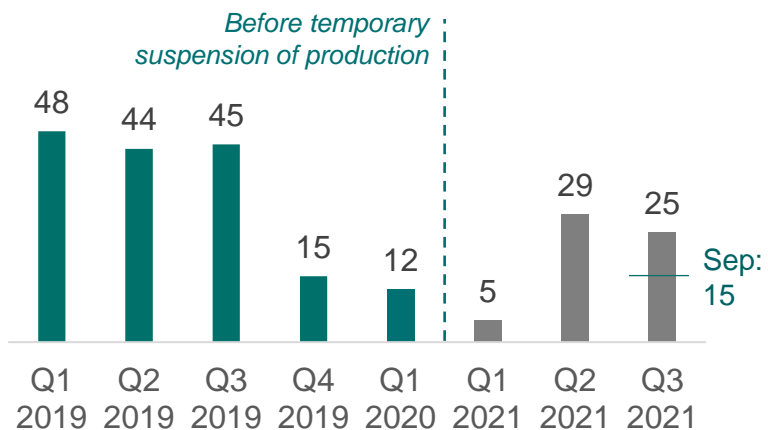
- Delivered excellent monthly operational performance for September 2021 – 15kt natural graphite produced, 85% recovery and US\$430/t C1 cash costs (FOB Nacala)
- Costs are expected to reduce further as production increases above 15kt per month and improvement initiatives continue to be embedded
- Production over the quarter was constrained due to disruption in the global container shipping market
  - Produced 25kt at 82% plant recovery for the quarter
  - C1 cash costs (FOB Nacala) of US\$684/t for the quarter
  - Product quality for the quarter was superior to the best performance reported during 2019, with better control over grade and recovery
- More than 95% of planned labour contingent reinstated
- Positive COVID-19 cases recorded during the quarter – all cases have fully recovered, no impact on Balama operations and vaccination program on-site and in the community underway



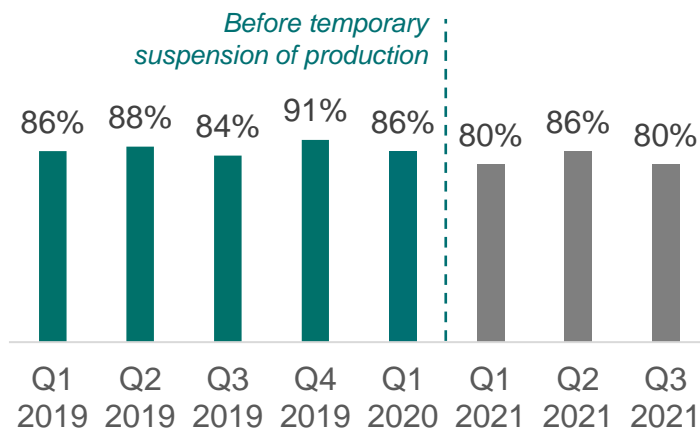


# Q3 2021: Balama Production and Operations

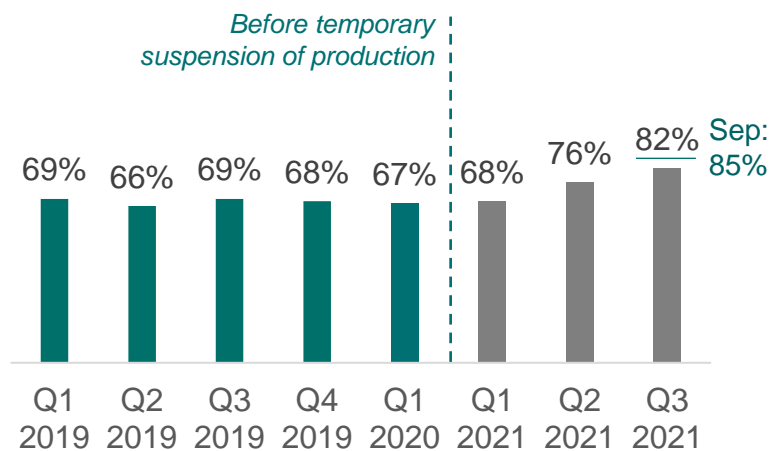
## Natural Graphite Production (kt)



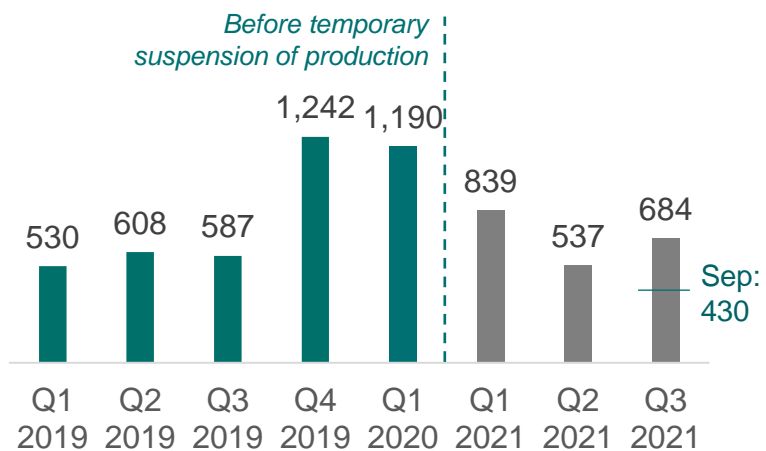
## Product Mix (% Fines)



## Plant Recovery



## C1 Costs (US\$/t)



## Q3 2021: Balama Sales and Marketing

- Sold and shipped 18kt natural graphite and practically all of 25kt finished product inventory contracted to customers
- 12kt of sales planned to ship from Nacala in late September 2021 was delayed to after quarter end due to a schedule change by a shipping services provider
- Strong demand and forward contracting with end-user customers – more than 50kt of sales orders in the December 2021 quarter with additional spot sales demand expected
- Chinese anode production increased to approximately 60kt per month during the quarter
- Chinese natural graphite restocking prior to winter production outage has been impacted by lower domestic supply and quality due to power cuts and reduced imports due to shipping disruption, providing strong price support
- Disruption in the global container shipping market is expected to moderate through December 2021 and March 2022 quarters with additional vessel capacity and container equipment being added for East Africa
- Weighted average sales price increased to US\$490/t (CIF) and further price support evident in coarse and fines markets post quarter end
- Focus continues to be increasing fines shipments to the Chinese battery supply chain with fines sales accounting for 86% of overall sales, driving basket price





# Balama is the largest natural graphite mining/processing operation globally

## Asset Overview

Location	Southern Cabo Delgado Province, Mozambique
Reserve & Resource <sup>1</sup>	108Mt (16% TGC) Graphite Ore Reserve 1,422Mt (10% TGC) Graphite Mineral Resource
Life of Mine <sup>2</sup>	~50 years
Mining	Simple open pit mining, low strip ratio
Processing	Conventional – includes crushing, grinding, flotation, filtration, drying, screening and bagging
Plant Capacity	2Mtpa ore throughput yielding ~350ktpa; 274kt produced since 2018
Product	94% to 98% fixed carbon graphite concentrate
C1 Cost <sup>3</sup>	Forecast ~US\$330/t at full capacity

## Key Dates

Mar 2021	Production recommenced at Balama
Mar 2020	Temporary suspension of production at Balama
Sep 2019	In response to drop in flake graphite prices, production moderated
Mar 2019	Graphite Mineral Resources and Ore Reserves updated
Jan 2019	Commercial production declared, with quarterly production of 33kt
Dec 2018	Balama produced >100kt in 2018
Sep 2018	Mining Agreement finalised with Government of Mozambique
Jan 2018	Balama transitions to operations, global sales commenced
Nov 2017	First production of natural graphite
Jul 2016	Balama process plant construction commenced
May 2015	Feasibility study completed

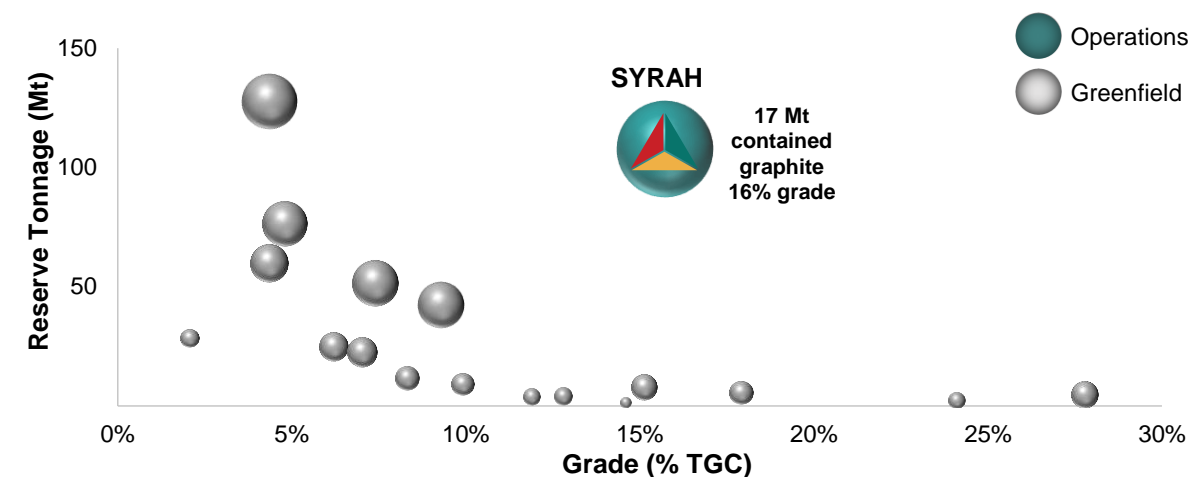
1. As at 31 December 2020.

2. Life of Mine based on Ore Reserves being depleted at 2Mt per annum of mill throughput.

3. Cash operating cost Free on Board (FOB) Nacala, excluding government royalties and taxes. ~50% of C1 costs are fixed at ~50% capacity utilisation.

4. Source: Company filings; Notes: Selected ASX/TSX-listed graphite projects with declared Reserves only and excludes Chinese producers. Bubble size reflects contained graphite reserves.

## Ex-China Natural Graphite Reserves<sup>4</sup>



## Balama Graphite Operation



# Q3 2021: Vidalia

## Market

- US Government set a 50% EV share of all new vehicles sales in the USA from 2030, calibrated with key auto OEMs
- Pace of battery capacity commitments is accelerating with auto OEMs positioning to create large-scale EV supply chains in the USA

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## Customer Engagement and Product Qualification

- Commercial engagement advancing strongly with 7 target battery supply chain participant and auto OEM customers
- Qualification and iterative testing programs on integrated natural graphite AAM are progressing in parallel with commercial engagement
- Full cell results have been positive across various characteristics, outperforming benchmarks

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## Product Development

- Base 16-micron AAM and premium 12-micron AAM
- Iteration from Vidalia operational capability through customer interaction
- R&D for future products that achieve quality/performance, cost and sustainability objectives
- Partnering with customers, industry, laboratories and universities on development



# Q3 2021: Vidalia

## Operations and Production

- Integrated spherical, purification and furnace operation is producing 16-micron and 12-micron AAM for qualification using Balama natural graphite
- No damage or injuries at Vidalia from Hurricane Ida

## Expansion Project

- Detailed engineering and procurement with Worley Group progressing well
- Completing an updated appraisal of capital costs for the 10ktpa AAM facility prior to final investment decision
- Target customer interest and USA market growth driving consideration of accelerated expansion of Vidalia beyond 10ktpa production capacity

## Construction Funding

- Advancing processes to secure customer and government & commercial financing commitments for the construction of a 10ktpa AAM facility
- Final investment decision planned for the December 2021 quarter, subject to customer and financing commitments



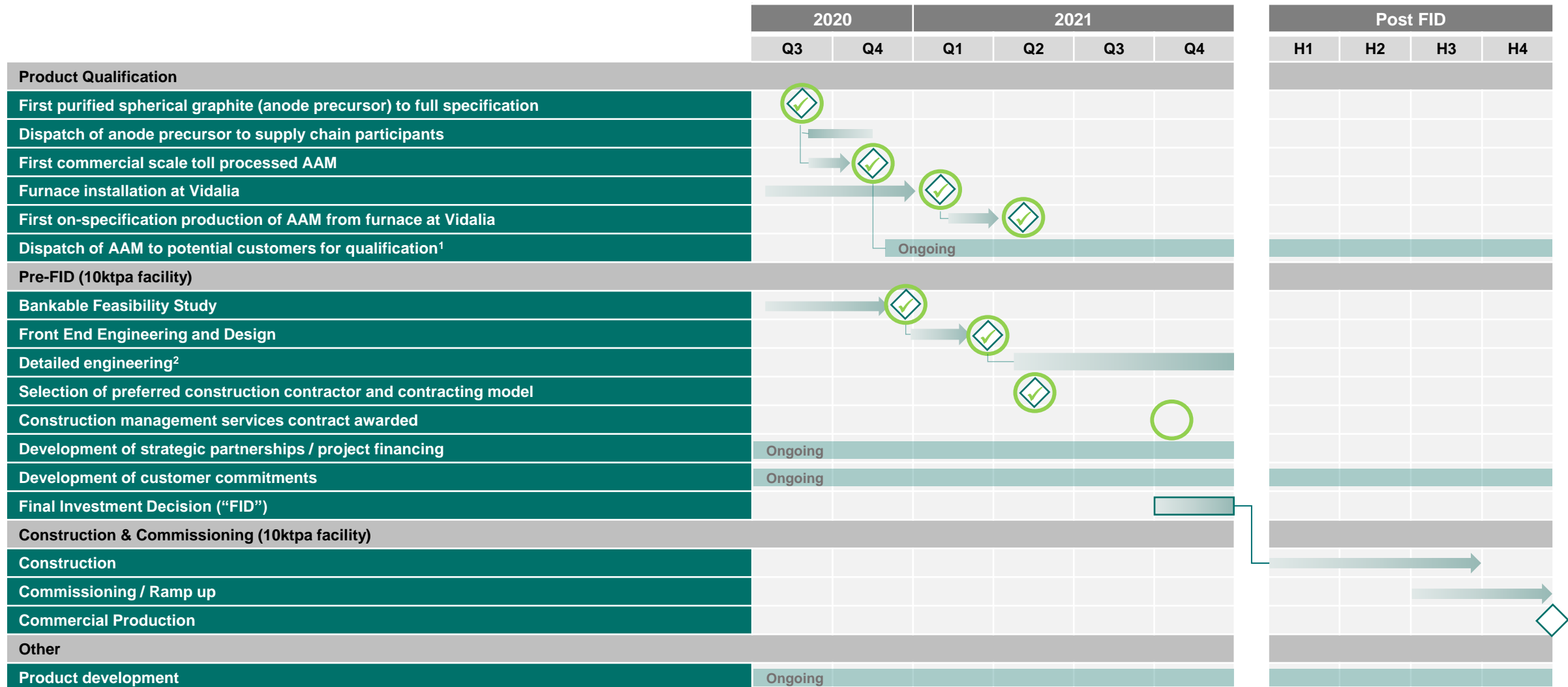


# De-risking Vidalia expansion

Date	Key Milestones
Q3 2021	✓ <b>Commercial discussions for multi-year purchase commitments progressed</b>
	✓ <b>Iterative customer testing advanced</b>
	✓ <b>Six months of detailed engineering completed</b>
	✓ <b>Full chain LCA completed and in final review</b>
Jun 2021	Worley awarded detailed engineering and procurement services contract
Jun 2021	Transitioned to detailed engineering for 10ktpa AAM facility
Jun 2021	Integrated AAM dispatched to potential customers for qualification
May 2021	First fully integrated production of AAM from Vidalia
Mar 2021	Transition to initial detailed design for 10ktpa AAM facility
Mar 2021	Installation and commissioning of furnace
Dec 2020	BFS confirms robust economics for large scale AAM production
Nov 2020	Dispatched AAM (toll treated) for product qualification by customers
Oct 2020	First production of AAM (toll treated) using anode precursor from Vidalia
Jul 2020	First production of purified spherical graphite to battery specification from Vidalia
Dec 2018	First production of unpurified spherical graphite at Vidalia
Sep 2018	Phase 1 study completed for large-scale AAM production at Vidalia
Aug 2018	Vidalia site purchase completed
Mar 2018	Benchmarking of AAM produced from Balama graphite completed
Nov 2016	Syrah announces plans to establish commercial scale facility in Louisiana
Apr 2016	Pilot test work program initiated in China (milling and purification)



# Progressing Vidalia to become an integrated natural graphite AAM producer

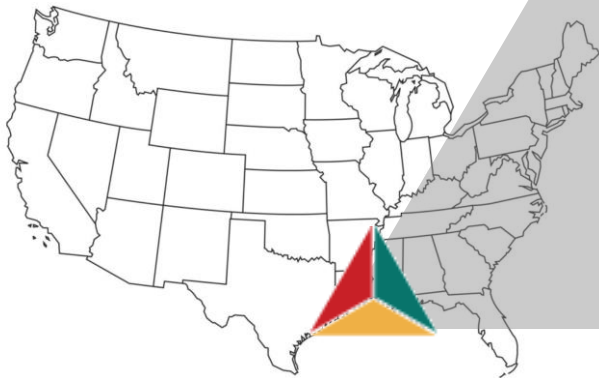


1. Evaluation by potential customers is an iterative process of product quality and performance assurance. Production of AAM samples will be ongoing post initial production volumes to support this process.
2. Project development pathway beyond detailed engineering to be informed by customer and financing commitments.



# Vidalia is well located for large-scale AAM production

- ✓ Proximity to potential customers
- ✓ Access to key utilities
- ✓ Options to expand facility size
- ✓ Direct barge/port access to Mississippi river
- ✓ Supportive government relations
- ✓ Access to key consumables (HF, HCL, Caustic)
- ✓ Capable workforce



Images clockwise from left: Overview of Syrah's Vidalia property and surrounds; Syrah's Vidalia facility Northeast looking southwest; Syrah's Vidalia facility south looking north

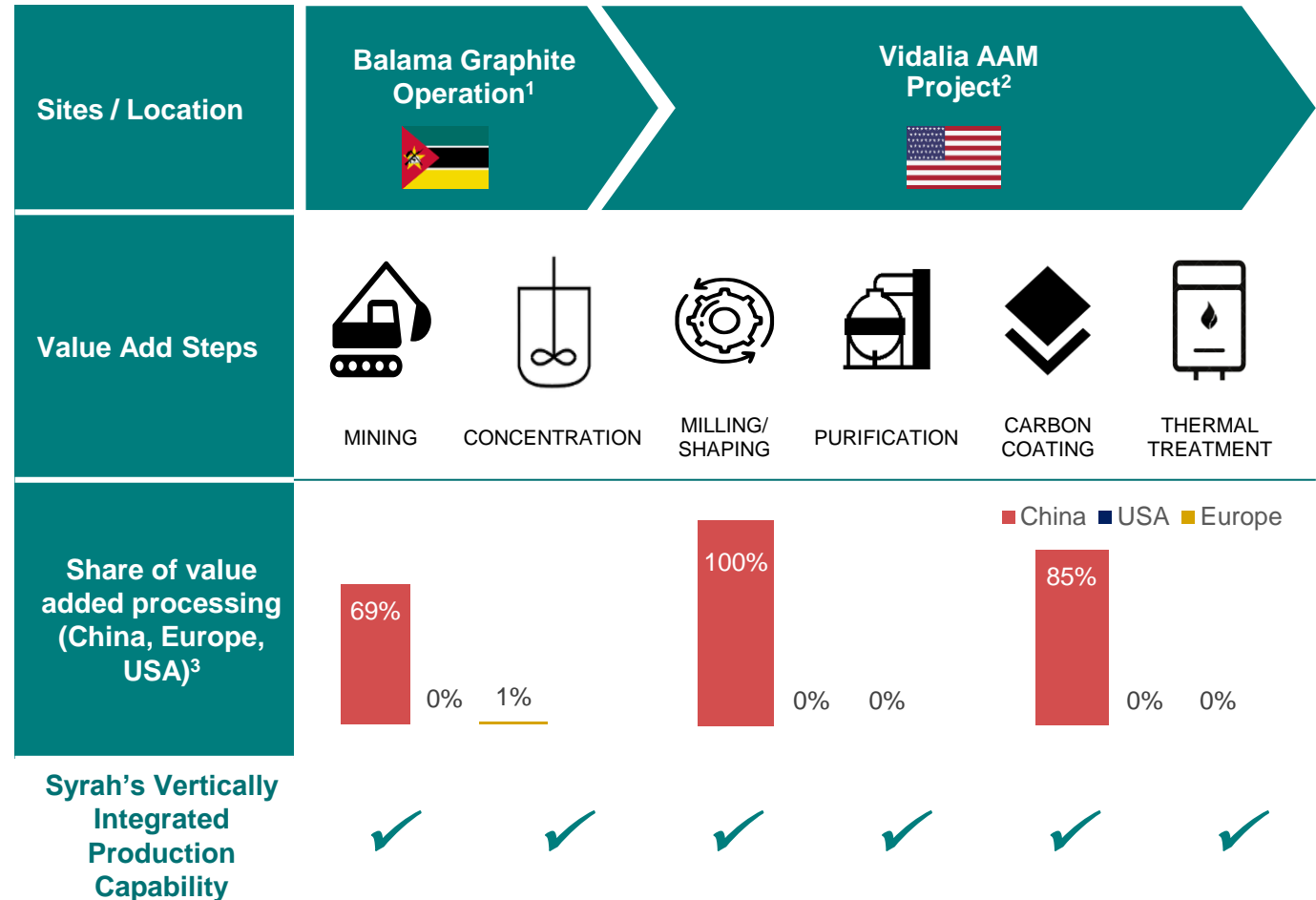
# Vertical integration through to AAM in USA will be a key differentiator for Syrah as the market matures

## Benefits of vertical integration to Syrah:

- Margin capture / cost protection
- Attractive financial returns
- Enhanced channel to market and customer diversity

## Benefits of vertical integration to battery makers / auto OEMs:

- Security of supply
- Optimisation of supply chain management
- Single chain of custody / full ESG auditability



1. Balama has capacity to produce 350ktpa natural graphite. Syrah has the option to use 3rd party natural graphite concentrate for toll feed at Vidalia subject to feed being appropriately qualified.

2. With the installation of the furnace, Vidalia has capacity to produce AAM on-site for ongoing product qualification. Bankable Feasibility Study (ASX release dated 1 December 2020) assessed options to expand the AAM facility to 10ktpa and 40ktpa AAM production capability.

3. Syrah Resources analysis, data from Benchmark Minerals Intelligence.

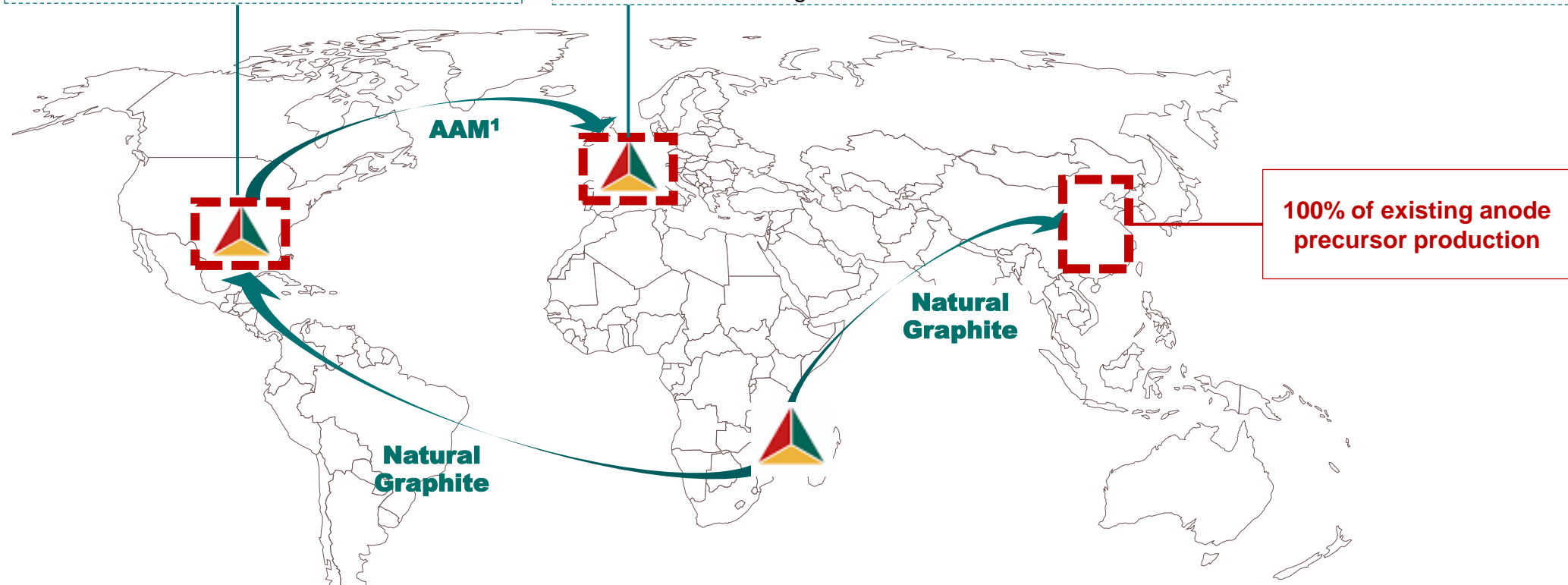
# Syrah is a near-term AAM supply option for USA and European markets

## Vidalia Battery Anode Material Project

- Establishing USA-based AAM production vertically integrated with Balama

## Export Markets

- Potential for Syrah to export from USA to ex-USA markets
- Potential to provide ex-China supply chains with alternate and complimentary source of AAM versus existing sources



1. AAM: Active Anode Material.



## Q4 2021 outlook

**EV sales growth and constructive demand environment for anode material has balanced the natural graphite market**

**Increasing Balama production beyond 15kt per month with consideration of market demand and forward customer contracting**

**Progressing to FID for expansion of production capacity to 10ktpa AAM at Vidalia to become a vertically integrated producer of natural graphite AAM to supply ex-Asia markets**

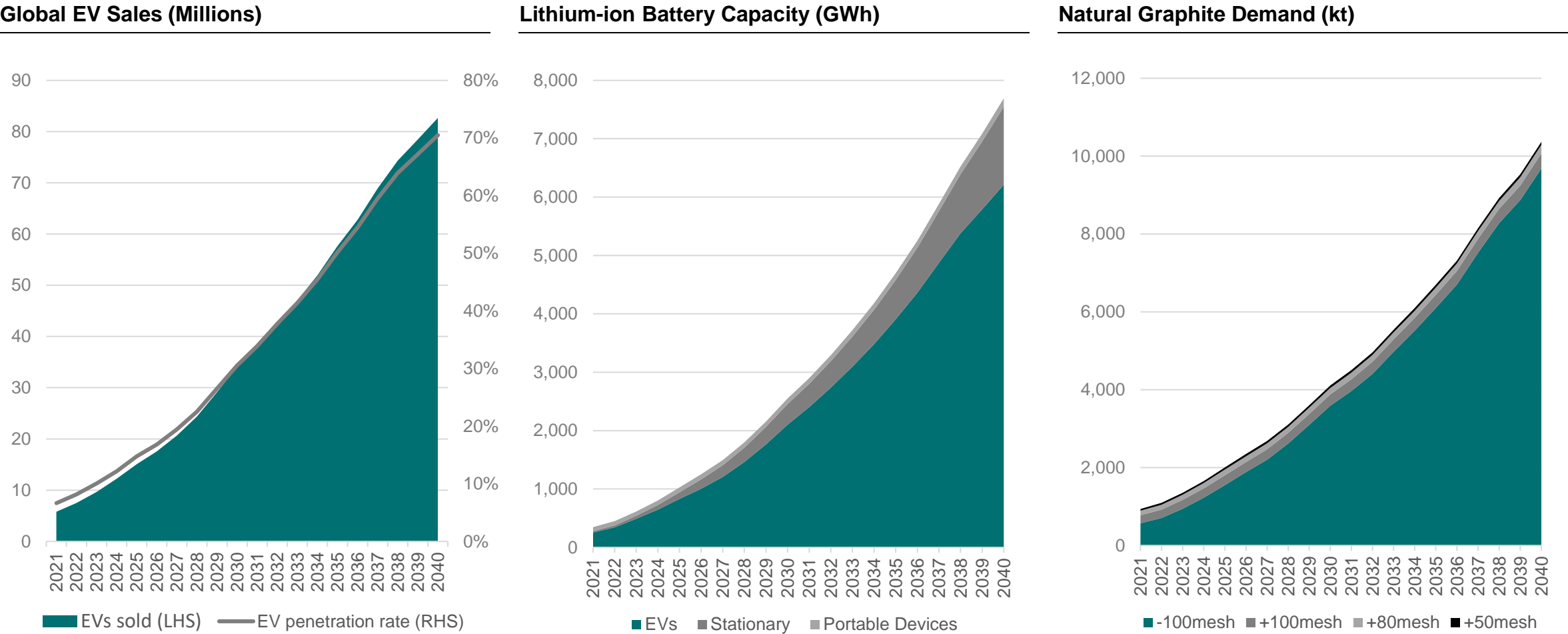
**Maintaining liquidity for Balama operations under various market scenarios and securing new funding to advance Vidalia beyond FID**



# APPENDIX



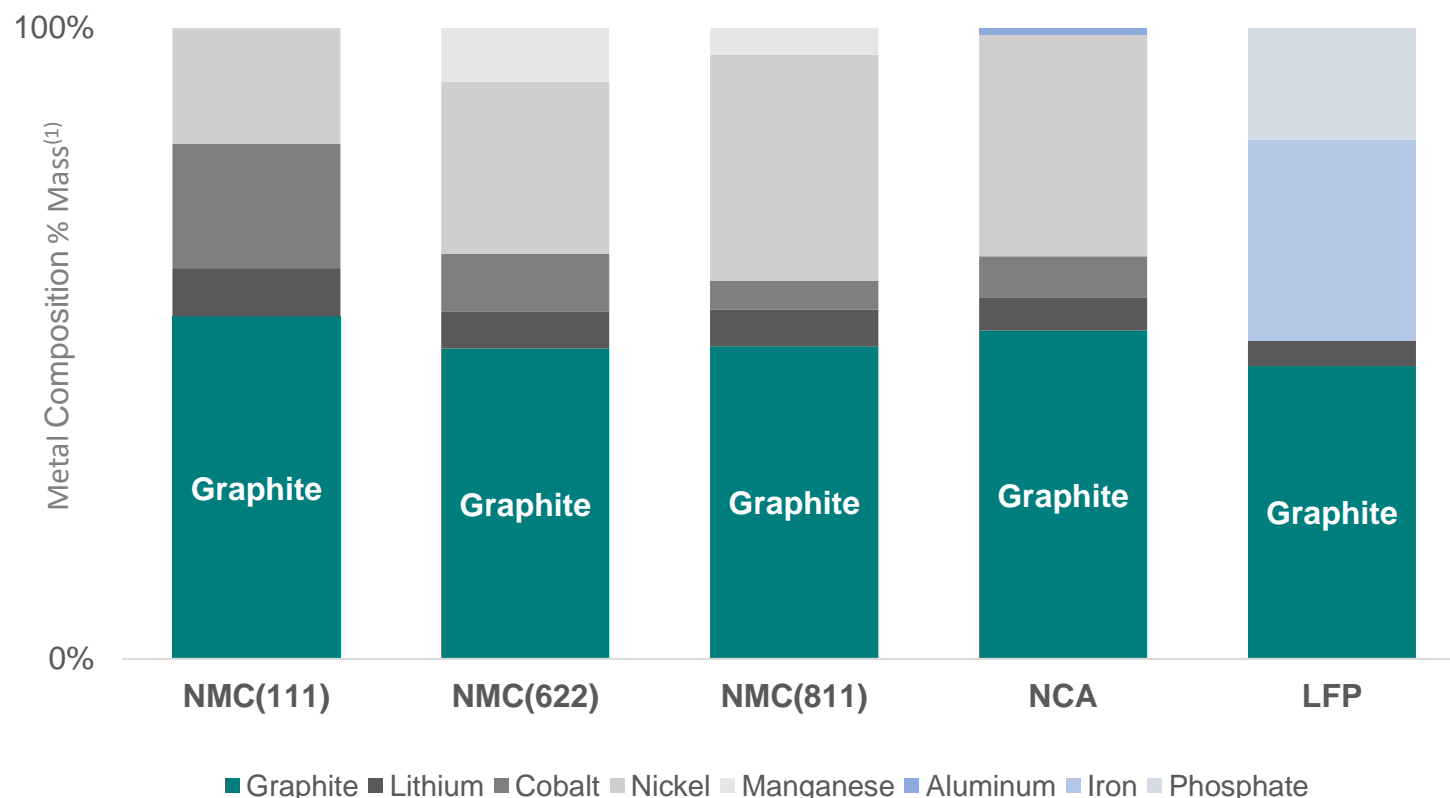
# Battery and natural graphite fines (-100mesh) demand in early stages of growth – driven by EV adoption



Source: Benchmark Minerals Intelligence Flake Graphite Forecast, Q3 2021.

# Graphite is a high intensity material in EV batteries – costs/emissions expected to drive shift towards natural graphite

**Battery Mineral Composition of Batteries**



Source: Syrah Resources analysis, data from Gaines, L., Richa, K., & Spangenberg, J. (2018) Key issues for Li-ion battery recycling (excludes oxygen), Benchmark Minerals Intelligence.

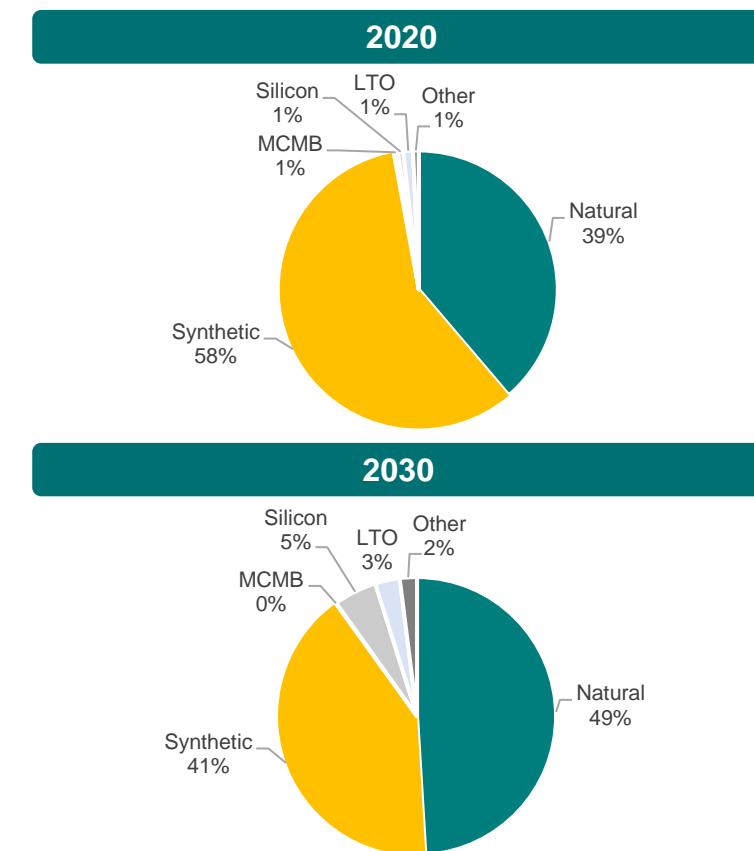
NMC: Lithium nickel manganese cobalt oxide battery.

NCA: Lithium nickel cobalt aluminium oxide battery.

LFP: Lithium iron phosphate battery.

1. Shown as percent of the total sum by elemental mass featured in the analysis for each battery chemistry, excludes oxygen (cathode).

**Natural Graphite Demand for Batteries**



Source: Source: Benchmark Minerals Intelligence Flake Graphite Forecast, Q2 2021.

# EV makers committed to LiB technology for expansion – advances required for commercial transition to solid state

## EV Manufacturers



Targeting EV sales share of 70% (Euro) / 50% (ex-Euro) by 2030 and all electric by 2033-35

Targeting EV/hybrid sales share of 50% by 2025 and all electric by 2030

Targeting zero-emission vehicles only by 2035

Targeting EV sales share of 40% by 2030

Targeting EV sales of 5.5mn units by 2030

Targeting EV sales share of 70% (Euro) / 35% (USA) by 2030

## Current Battery Supplier



## Future Battery Supplier



Targeting partnerships in Europe for 240GWh by 2030

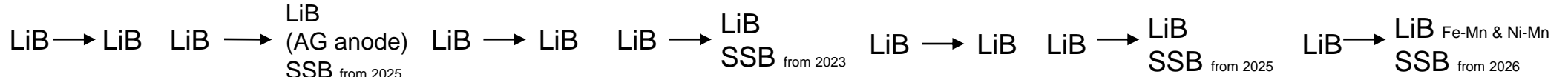
Targeting partnerships in Europe and USA for 200GWh by 2030

Targeting partnerships in US for 70GWh by 2025

Targeting partnerships in Europe 60GWh by 2025

Targeting supply arrangements and partnerships in US and Europe for 260GWh by 2030

## Transition Plan



# Syrah's global business to supply growing battery anode demand

